

P. aeruginosa bacteria associated with increased hospitalizations in COPD patients

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Patients with chronic obstructive pulmonary disease (COPD) who become infected with the bacterium *Pseudomonas aeruginosa* are more likely to have worse clinical outcomes and experience more hospitalizations during the course of their disease than COPD patients who are not infected, according to researchers from Buffalo, N.Y.

The study will be presented at the ATS 2012 International Conference in San Francisco.

Bacterial bronchial [infection](#) plays a key role in the course of COPD, causing [chronic inflammation](#) as well as acute exacerbations of symptoms, and is related to increased levels of illness and mortality among COPD patients.

"Previous studies have shown that infection with *P. aeruginosa* is more common in patients with more severe COPD," said study researcher Sanjay Sethi, MD, FACP, chief of the Pulmonary/Critical Care/[Sleep Medicine](#) Division at the University at Buffalo, SUNY. "In this study, we wanted to determine if infection with *P. aeruginosa* was associated with poorer clinical outcomes, such as hospitalizations, need for intensive care, and greater numbers of exacerbations."

The study focused on 177 patients who participated in a COPD study at the Buffalo Veterans Affairs Medical Center from March 1994 to January 2011. Study participants had clinic visits every month and additional visits during exacerbations. During each visit, clinical

information and sputum samples were taken. Patients with less than six months of follow-up were excluded from the study.

For this analysis, study participants were divided into two groups: those whose sputum samples showed evidence of *P. aeruginosa* (PA+) infection and those whose samples showed no evidence of the bacteria (PA-). In addition, follow-up times were divided into two phases, Phase 1 denoting the time period prior to acquiring *P. aeruginosa* and Phase 2 covering the time period after the bacteria had been identified in the sputum.

"As COPD progresses, hospitalizations and exacerbations tend to increase and we had to account for that in our analysis. Therefore, we matched PA+ subjects with PA- subjects having similar duration of follow-up in the study," Dr. Sethi said. "Rates of events, including hospitalizations, ICU admissions and COPD exacerbations, and relative risks of having at least one event were compared in the two phases within and between the two groups."

In the study's final analysis, 55 PA+ study participants were matched with 55 PA- control subjects. Although the two groups were well matched in terms of age, sex, pack years of smoking and lung function, the rates of hospitalization in the PA+ group after *P. aeruginosa* infection were significantly higher than those in the control group, and the relative risk of having at least one hospitalization, intensive care admission or exacerbation also were all greater.

"Similar analyses are being performed with other bacterial pathogens identified in our COPD study clinic data to determine if this observation is unique to *P. aeruginosa* or extends to other bacterial pathogens," Dr. Sethi said.

"The possibility exists that, in our study, *P. aeruginosa* may be simply a

'colonizing bacteria' – a marker for worsening COPD– rather than a cause of the worse [clinical outcomes](#)," he added. "However, we and others have shown that *P. aeruginosa* behaves as an infectious pathogen in COPD. Also, in related chronic airway diseases, such as cystic fibrosis, [Pseudomonas](#) infection is a major cause of morbidity and mortality."

Dr. Sethi noted that to date, *P. aeruginosa* infection has received little attention as an important pathogen in COPD. As a result, studies of specific treatments to eradicate or contain this infection have not been conducted in COPD.

"This study suggests that we should pay more attention to these bacteria in COPD, and treatments to deal with this pathogen in COPD should be developed," he said.

More information: "Acquisition Of Pseudomonas Aeruginosa Is Associated With Adverse Clinical Outcomes In COPD" (Session D105, Wednesday, May 23, Room 2024, Moscone Center; Abstract 27711)

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